



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,867	01/09/2002	Kaius K. Polikarpus	DP-300218	9792

7590 06/04/2004

Vincent A. Cichosz
DELPHI TECHNOLOGIES, INC.
Legal Staff
1450 West Long Lake - 4th Floor
Troy, MI 48098

EXAMINER

OLSEN, KAJ K

ART UNIT	PAPER NUMBER
----------	--------------

1753

DATE MAILED: 06/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/042,867

Applicant(s)

POLIKARPUS ET AL.

Examiner

Kaj K Olsen

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 40-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-17 and 40-45 is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1-29-2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement includes a document by individuals Armstrong and Meinhardt. However, it is unclear what this document is and whether this document would qualify as prior art under any of the subheadings of 35 U.S.C. 102. Was this document published and if so, where?

Drawings

2. Applicant's suggested drawing changes have been approved. The examiner is approving the changes based on claim 1, which suggested that second electrode must be in intimate contact with the insulating layer, and on the suggestion of paragraph 0037, which states that the electrodes are circular and one-quarter the width of the various tape layers. These two suggestions from the originally filed disclosure would appear to support the filed drawing changes.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 1753

5. Friese '800 discloses a gas sensor comprising an electrolyte layer 24 having on opposite sides a first electrode 26, 28 and a second electrode 25, 27. See fig. 1 and col. 2, lines 32-59. Friese '800 further discloses an insulating layer 21 that is in intimate contact with element 27 where the insulating layer comprises a combination of alumina and frit. See col. 3, lines 4-31. With respect to element 27 being the electrode, although the reference describes this element as being a "strip conductor", the combination of elements 25 and 27 would read on the claimed term "electrode" giving the claim language its broadest reasonable interpretation. The leads of an electrode can reasonably be construed as being an extension of an electrode absent any explicit recitation of a lead separate from the electrode.

6. With respect to the claimed composition of frit, see col. 4, lines 9-21.

7. With respect to the claimed resistivities, because the layer of Friese '800 already sets forth the claimed insulating layer compositions, the layers of Friese '800 inherently satisfy the claimed resistivities.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

Art Unit: 1753

evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wiedenmann et al (USP 6,350,357 B1) in view of Makino et al (USP 5,676,811) further evidenced by Friese et al (USP 4,221,650) and Aldrich 2003-2004 Handbook of Fine Chemicals and Laboratory Equipment. Friese and Aldrich are being cited for the first time with this office action.

11. Wiedenmann discloses an electrolyte layer 21 having disposed on opposite sides a first and second electrode (31 and 35 respectively) (fig. 1 and 2). Wiedenmann also discloses an insulating layer 50 that comprises a combination of alumina and frit material (paragraph bridging col. 1 and 2; col. 3, lines 10-23; and Examples 1 and 2). Although Wiedenmann does not explicitly disclose the use of this insulating layer be in intimate contact with the second electrode (spacer layer 25, which is in intimate contact is disclosed as being an electrolyte layer).

However, it is conventional in the art to construct the spacer layer (i.e. layer 25 of Wiedenmann) out of the same insulating material that the heater layer was sandwiched in. This is particularly demonstrated by Makino, which teaches a sensor where the layer 5 that defines the reference oxygen space (equivalent to the layer 25 of Wiedenmann) is an insulating layer (paragraph bridging col. 4 and 5 of Makino). The components of the insulating layer of Wiedenmann are cheaper than zirconia. See Friese '650, col. 6, lines 3-9. Aldrich establishes that silicon dioxide (the other major component of Wiedenmann's insulator) is much cheaper than zirconia. In addition, the insulating material of Wiedenmann provides excellent gas tightness (col. 1, lines

Art Unit: 1753

50-55). In addition, constructing layer 25 out of insulating material would improve the heat conductivity of the sensor because alumina has better heat conductivity thereby providing better sensor performance (see Friese '650, col. 3, lines 2-6). Finally, insulating materials provide greater electrical resistance than electrolyte layers. Thereby constructing layer 25 out of insulating material would further prevent heater current from interfering with the electrochemical sensor. See the various references to insulation resistance in the examples of Wiedenmann. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Makino and construct the spacer layer of Wiedenmann out of its insulator in order to take advantage of the above set forth cost, gas-tightness, heat conductivity, and insulating advantages.

12. With respect to the particular levels of frit comprising up to 10% or 2-8% or 4-6%, although Wiedenmann does not disclose any particular embodiments having those specified amount, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize those particular frit concentrations, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

13. With respect to the claimed resistivities, because the layer of Wiedenmann already sets forth the claimed insulating layer compositions, the layers of Wiedenmann inherently satisfy the claimed resistivities.

14. With respect to the particular amount of silica present, see Wiedenmann, col. 3, lines 65 and 66.

Response to Arguments

15. Applicant's arguments filed 3-16-2004 have been fully considered but they are moot. The examiner has reorganized the previous rejection and has now included evidentiary teachings establishing that alumina and SiO₂ were cheaper than zirconia.

Allowable Subject Matter

16. Claims 13-17 and 40-45 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Thursday from 6:30 A.M. to 4:00 P.M. and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/042,867

Page 7

Art Unit: 1753

A handwritten signature in black ink, appearing to read 'Kaj Olsen', with a long horizontal flourish extending to the right.

Kaj Olsen Ph.D.
Primary Examiner
AU 1753
June 1, 2004